Recession managers and mutual fund performance

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ABSTRACT

We find that fund managers who began their careers during recessions produce superior returns. This superior performance is not unconditional, as they exhibit better market timing than their non-recession counterparts in recessions, but do not demonstrate better stock picking in booms. Exploring managers' portfolio choices across years, we find that recession managers tilt their investments towards defensive, rather than cyclical, industries during and before recession periods. Overall, our findings support the argument that the economic conditions under which an individual initially entered the labour market exert a long-term impact on her career outcomes and decision-making.

JEL classification: G23; J24; G11

Keywords: Mutual fund managers; Recession; Economic conditions; Performance; Market timing

1. Introduction

The mutual fund industry has continuously played an important role in the US economy. As of 2017, 102 million cross-sectional individual investors in 56.2 million households, representing 44.5 percent of all US households, held an estimated $16.9 trillion (90 percent) in mutual fund assets for various financial goals, and 66 percent viewed the industry favourably (ICI, 2018).[1] Such a huge investment and the investor's favourable perception are perplexing given existing evidence of actively managed funds' underperformance relative to the market that suggests fund managers on average do not have the skills required to beat the market (e.g., Carhart, 1997; French, 2008; Fama and French, 2010). Despite the struggle to consistently outperform the index, and the tendency of investors ditching their fund managers,[2] some active managers are successful. Therefore, understanding the factors that explain the cross-sectional differences in fund performance is a key issue for both academics and practitioners. Several studies have shown that some managerial characteristics such as educational background (Chevalier and Ellison, 1999; Gottesman and Morey, 2006), gender (Atkinson et al. 2003; Niessen-Ruenzi and Ruenzi, 2019), and age (Greenwood and Nagel, 2009) are related to performance outcomes. In this paper, we extend this line of research by exploring whether fund managers' experience-related characteristics may affect their investment strategies and fund performance.

[1] ICI (2018) also identified the following facts. About 84 percent of these households have moderate or higher incomes. The baby boom generation is the largest shareholder group and holds half of the household mutual funds' assets. These investments are mainly for retirements, reduction in taxable income, and emergencies. Active mutual funds still were the majority of fund assets, representing about 65 percent in 2017, down from 85 percent in 2007. With $18.75 trillion in total net assets across 9,356 funds, the US mutual fund industry is the largest in the world by the end of 2017. Over the past 10 years, the net new cash flows to mutual funds totalled $230 billion.

[2] CIO (2019) reports that Calpers ditched most of its external equity fund managers by cutting the number from 17 mandates to three and slashing their allocation from $33.6bn to $5.5bn. In Europe, active fund managers have seen the largest outflows in 2019 (Morningstar, 2020). Even during the Covid-19 high-volatility period, their makeshift, active funds underperformed (Pastor and Vorsatz, 2020). Despite the underperformance on average, Morningstar (2019) reports that nearly half (48%) of active U.S. stock funds survived and outperformed their average passive peer over the 12 months through June 2019, up from 37% in the year through June 2018.

The mutual fund industry is an ideal laboratory to investigate the association between managerial experience-related characteristics and performance outcomes, one of the most important research topics in the corporate finance literature. Unlike chief executive officers (CEOs) of corporations, fund managers are typically a staple of their financial products and hence could have a more direct impact on the resulting performance (Chuprinin and Sosyura, 2018). However, relative to the voluminous literature demonstrating the significant effect of CEOs' experience-related characteristics on corporate decision-making,[3] much less is known about whether and how mutual fund managers' backgrounds influence their investment decisions. Although more recent studies provide evidence that fund performance is affected by the manager's experience outside the financial industry (Cici et al., 2018), experience of industry-specific shocks (Kempf et al., 2017), and general and specific human capital (Zambrana and Zapatero, 2020), the literature remains silent as to whether a fund manager's initial experience at the early-career stage influences her investment strategy and fund performance. Our study intends to fill this gap.

We consider the economic environment at the time a fund manager initially entered the labour market and examine whether such experience-related characteristic influences her management style and fund performance. To mitigate the concern that the timing of an individual's first labour market entry is endogenously determined, we proxy for the exogenous date of labour market entry by using the year a manager completed her undergraduate study, which is also the year with the highest fraction of managers starting their first jobs in our data. We therefore define recession fund managers as those who started their careers in a recession year, based on the business cycle dating database of the National Bureau of Economic Research (NBER).

[3] See, for example, Benmelech and Frydman (2015), Bernile et al. (2017), Cain and McKeon (2016), Custódio et al. (2013), Dittmar and Duchin (2016), Gopalan et al. (2021), Malmendier et al. (2011), and Sunder et al. (2017).

We base our expectations on the concept of imprinting at the individual level from a bulk of behavioural economics literature. Imprinting is broadly described as "a process whereby, during a brief period of susceptibility, a focal entity develops characteristics that reflect prominent features of the environment, and these characteristics continue to persist despite significant environmental changes in subsequent periods." (Marquis and Tilcsik, 2013, p.199). At the time of labour market entry, individuals are particularly open to environmental stimuli, leading to anxiety and cognitive unfreezing (Schein, 1971). Marquis and Tilcsik (2013) further indicate that the beginning of an individual's career, which represents a transition from the world of education to the world of work, is a critical and sensitive period of imprinting. Therefore, individuals are likely to form their professional mindset during this period such that their subsequent behaviours bear the stamp of the environment. Previous studies have shown that for a variety of populations, including lawyers, scientists, managers, economists, and investment bankers, early career experiences exert a lasting effect on individuals' beliefs, behaviours, and orientations (Higgins, 2005; Oyer, 2006, 2008; McEvily et al., 2012; Tilcsik, 2012; Azoulay et al., 2017).

Finance researchers provide useful insights into the long-term effects of the economic conditions at the beginning of an individual's career. For example, Schoar and Zuo (2017) document that initial macroeconomic conditions exert a lasting influence on CEO careers. They show that CEOs who started their careers during recessions join, and ultimately become a CEO for the first time at, smaller firms and tend to have a more conservative management style.[4] Similarly, He et al. (2018) find that auditors who entered the labour market during economic downturns have a higher degree of professional scepticism and are more likely to issue audit adjustments. One recent study by Law and Zuo (2020) reports a reliable relation between early economic conditions and financial advisor misconduct. In addition, the announcement return

[4] See Guenzel and Malmendier (2020) for a review of how prior formative experiences affect managerial decisions.

to the appointment of a recession CEO is significantly positive, indicating that the skill set of a recession CEO is in short supply in the executive labour market (Schoar and Zuo, 2016).

Similar to the arguments in Malmendier and Nagel (2011), Schoar and Zuo (2017), and He et al. (2018), we expect recession fund managers to be more conservative in risk taking and have a higher degree of professional scepticism in considering their investment decisions. Moreover, given that recession experience at the early-career stage can have a profound and lasting effect on individuals' awareness of changes in the macroeconomic environment (Giuliano and Spilimbergo, 2014; Malmendier and Nagel, 2016; Malmendier et al., 2020), recession fund managers might be more sensitive to changes in the business cycle (e.g., recessions) than their non-recession counterparts. Moreover, since prior studies of mutual funds have highlighted that fund performance decreases with excessive risk taking (Huang et al., 2011; Ma and Tang, 2019) and increases with better managerial anticipation of business cycles (Kacperczyk et al., 2016), we hypothesize a positive relation between recession managers and fund performance.

We test our hypothesis using a sample of 960 unique fund managers from 1990 to 2016. We measure fund performance as the annualized risk-adjusted returns estimated using the one-factor capital asset pricing model (CAPM), the Fama-French three-factor model, and the Carhart four-factor model, based on a two-year rolling window regression method. We find that the adjusted excess annualized return of funds managed by recession managers are 225 basis points higher than those run by non-recession managers when using CAMP, 246 when using the Fama-French three-factor model, and 244 when using the Carhart four-factor model.

We note that the selection effect on job assignments of mutual fund managers could drive our baseline results if, in recessions, fund companies recruit candidates that are more talented. We try to mitigate this concern in several ways. First, in previous mutual fund studies, a

manager's innate talent is typically measured by her educational background (e.g., Golec, 1996; Chevalier and Ellison, 1999; Gottesman and Morey, 2006). We thus compare educational qualifications of recession managers with those of non-recession managers, such as Ivy League universities and MBA degree. We find that recession managers are less likely to graduate from Ivy League universities, and that there is no significant difference between the two groups in obtaining an MBA degree. We also compare the professional credential (e.g., CFA) held by recession and non-recession managers and find no significant difference between the two groups of managers as CFA charterholders. Second, we compare the career trajectory between recession and non-recession managers by exploring the number of years it takes for them to enter the investment industry and become fund managers for the first time. We also compare the size of the first fund where recession and non-recession managers start their careers. If recession managers are more talented with better job prospects, they should have a faster career trajectory and are more likely to start their careers in large funds than their non-recession counterparts. Our results show that the differences in career trajectory and the size of the first fund between the two groups are statistically insignificant. Third, we repeat the baseline analysis using a sample that consists of recession fund managers and the matched non-recession fund managers. We continue to find a positive and significant relationship between recession managers and fund performance. Fourth, we include fund family fixed effects and fund investment style fixed effects to control for the possibility that recession managers might be selected to join superior fund families or manage funds in certain styles. We find that our results remain consistent. Finally, we explore how manager-type switch events affect fund performance by examining changes in fund performance around manager turnovers. Our baseline results remain robust: fund performance increases significantly after a recession manager replaces a non-recession manager, but we are cautious in interpreting these results, as some unobservable characteristics are likely to affect the selection of mutual fund managers.

In the spirit of Schoar and Zuo (2017), we next explore two possible channels of the observed recession cohort effect: the general recession channel and the firm-specific channel. While the general recession channel suggests that the recession cohort effect is mainly due to the recession environment, the firm-specific channel indicates that it is the type of firm where a manager starts her career that drives the recession cohort effect. We find some evidence that the firm-specific channel explains a significant part of the recession cohort effect, lending further support to the argument that first job assignment may affect the type of human capital a manager acquires and, in turn, have a long-term impact on her career outcomes.[5]

We further study whether the performance of recession fund managers varies with the business cycle. We construct an indicator variable of whether the current calendar month is within a recession period, using the NBER business cycle dating database, and interact it with the indicator variable for recession managers. We find that the interaction term has a positive and significant coefficient, suggesting that in recession periods, the positive association between recession managers and fund performance becomes more prominent. These findings are in line with Ferson and Schadt (1996), Glode (2011), Kosowski (2011), De Souza and Lynch (2012), and Kacperczyk et al. (2016), among others.

A natural question to ask is how recession managers produce superior performance for their clients, especially during recessions. It could be that recession managers have skills and expertise that allow them to add value for clients by exhibiting better market timing in recessions (e.g., Kacperczyk et al., 2014). To explore this possibility, we follow the methodological approach of Kacperczyk et al. (2014). Specifically, we measure fund managers'

[5] Schoar and Zuo (2017) indicate that the firm-specific channel is based on the context of task-specific human capital established in Gibbons and Waldman (2006). Moreover, this channel is also related to prior studies that confirm the lasting effect of early job assignments on one's career outcomes (e.g., Jovanovic, 1979; Gibbons and Waldman 2004), and the importance of the early-career stage as a sensitive period of imprinting for individuals (e.g., Higgins 2005; Marquis and Tilcsik, 2013).

skills by developing for each fund estimates of market timing (a market-based measure of the co-movement between a fund's allocation to each asset class and the systematic component of stock returns), and stock picking (a market-based measure of the co-movement between a fund's allocation to each stock and the idiosyncratic component of stock returns). We find that recession managers show better market-timing skills in recessions, whereas there is no significant evidence that recession managers exhibit better stock picking skills in booms. Additional analysis suggests that our findings are due to fund managers' early career experiences rather than their most recent recession influence or aggregate recession familiarity.

To gain a better understanding of the investment strategies recession fund managers adopt to time the market, we investigate the portfolio choices of mutual funds managed by recession managers. Our results suggest that, on average, recession managers hold more cash and overweight their portfolios with more defensive sectors in recession periods. Moreover, they also appear to be better able to anticipate future recessions and adjust their portfolios accordingly. In support of this view, using the data on mutual fund holdings during the 2008–2009 financial crisis, we show that, relative to the 2004 first quarter benchmark holding level, funds run by recession managers increased their portfolio holdings of defensive stocks by more than five times during the business cycle peak by the end of 2007.[6] Non-recession fund managers also increased their portfolio holdings of defensive stocks during the same period, but at a somewhat slower pace.

The remainder of the paper is organized as follows. Section 2 relates our research to the existing literature. Section 3 describes our data and summary statistics. Section 4 presents the baseline results and additional analyses, and Section 5 concludes.

[6] We use the business cycle dating database to define this peak.

2. Relation to the existing literature

Our paper contributes to two strands of literature. First, it adds to the literature that investigates the effects of managerial characteristics on fund performance. Golec (1996) finds that young fund managers with MBA degrees and longer tenures have better risk-adjusted performance. Chevalier and Ellison (1999) empirically study whether systematic cross-sectional differences in fund performance are associated with characteristics of managers. Using a sample of 492 fund managers, they find that managers who graduated from more prestigious universities have better performance, and that older managers perform worse than younger managers. A growing body of literature has then related fund's investment style and performance to managerial characteristics, such as managers' gender (Atkinson et al. 2003; Niessen-Ruenzi and Ruenzi, 2019), educational background (Gottesman and Morey, 2006), overconfidence (Puetz and Ruenzi, 2011), and investment experience (Greenwood and Nagel, 2009). We extend this research by examining whether managers' early career experiences affect fund performance. We find that fund managers who began their careers in recessions perform better than their counterparts who started their careers in non-recession periods.

Second, our paper contributes to the recent and emerging literature on the lasting effect of initial labour market conditions on one's professional mindset and decision-making. This literature documents that initial labour market conditions significantly influence the type and quality of an individual's first job assignment and in turn have a long-term impact on her career outcomes, because of the different opportunities to develop on-the-job skills (e.g., Jovanovic, 1979; Neal 1999; Lazear, 2004; Gibbons and Waldman, 2006; Oyer, 2006; Schoar and Zuo, 2016, 2017). For example, macroeconomic conditions at graduation have a causal effect on economists' long-term job characteristics and research productivity (Oyer, 2006), while stock market conditions at graduation of MBA students have a significant impact on the likelihood of entering Wall Street and the amount of lifetime earnings (Oyer, 2008). In a similar vein,

Kahn (2010) and Oreopoulos et al. (2012) show that graduating in recessions has a negative impact on long-term earnings and level of occupations, while some graduates may decrease the cost of recessions by switching to better positions quickly. For the corporate sector, Malmendier et al. (2011) show that formative early-life experiences, such as growing up during the Great Depression, can induce a CEO to refrain from borrowing and prefer internal funding. Schoar and Zuo (2017) find that CEOs who entered the labour market during recessions have more conservative management styles, including lower investment propensities in research and development, more cost cutting, and lower leverage and working capital requirements. He et al. (2018) find that the economic conditions have a lasting effect on an auditor's degree of professional scepticism and auditing style. Downturn auditors who started their careers during economic downturn years are more likely to issue audit adjustments and, when no adjustments are issued, to provide a modified audit opinion. Law and Zuo (2020) show that financial advisors who began their careers in recessions are less likely to commit professional misconduct as compared to their peers who started careers during other times. Our study extends this literature to consider the mutual fund context. We find that economic conditions at a fund manager's career start have a long-term effect on her performance and fund management skills.

Our study is related to three contemporaneous papers. Kempf et al. (2017) study both positive and negative job experiences of fund managers and ask whether these experiences affect performance outcomes. Using the number of industry-specific shocks a manager observes throughout her career, they show that experienced fund managers outperform unexperienced fund managers, and that the difference is mainly due to negative job experiences. Cici et al. (2018) consider a fund manager's experience in non-financial sectors and find evidence that fund managers with experience outside the financial sector show better stock-picking ability for these industries, but generally no superior market-timing ability. Zambrana

and Zapatero (2020) explore the relation between managers' prior asset management experiences and fund performance. They find that managers who manage funds within a single investment style show better stock-picking ability and those with experience in managing funds across several investment styles show better market-timing ability. Their results suggest that fund companies achieve higher returns if they allocate managers' skills accordingly.

However, our paper differs from these studies. We consider the economic conditions when fund managers initially enter the labour market and assess whether recession fund managers provide better performance than their non-recession counterparts. We also test whether recession managers have better market-timing ability, and, therefore, examine whether our results provide evidence consistent with the learning-by-doing argument put forth by Kempf et al. (2017). Additionally, our tests control for fund managers' personal characteristics such as gender, age, and qualifications as well as fund-specific factors including fund size, age, flow, expenses and turnover, and the industry composition of the fund's portfolio holdings.

3. Data and methodology

3.1 Sample selection

We use several data sets to construct our sample. We begin with the Center for Research in Security Prices (CRSP) Survivorship Bias Free Mutual Fund Database, which contains information on fund returns and other important fund characteristics such as size, as measured by total net assets (TNA), age, flows, expense ratio, and turnover. We focus on open-end US-domiciled actively managed equity mutual funds and eliminate balanced, sector, bond, money market, international, and index funds. We collect fund portfolio holdings information from the Thomson Reuters Mutual Funds Holding Database (CDA/Spectrum Mutual Fund Holdings Database). We merge the data on fund characteristics with their portfolio holdings using the MFLINKS files. We exclude fund observations with less than 10 stocks in their holdings.

We next merge the CRSP share class-level characteristics data with the managerial profile data from Morningstar Direct following the procedures suggested by Pastor et al. (2015) and Berk and van Binsbergen (2015). We match fund observations from these two datasets if they are in the same year and month and have the same ticker symbol. For observations with missing tickers in either dataset, we run text-matching algorithms based on fund name. We further check the matching quality by taking the absolute differences in both the fund's TNA and monthly returns provided by CRSP and Morningstar Direct, respectively. We identify cases where, for a given year and month, the matched observations have a return difference larger than two basis points and a TNA difference larger than $0.02 million. We define a correct match as one with less than 40% of the above differences in each of the merged funds. In the merged dataset, we focus on funds run by single managers, which constitute more than 40% of the equity-domicile fund universe. We address the multiple counting issue by aggregating fund share class-level characteristics.[7] We require our sample funds to have at least 24 consecutive months of returns to obtain more precise performance estimation. To avoid the impact of frequent management turnover, we screen fund managers with less than 12 consecutive months of performance records.

To construct managers' career profiles, we first obtain fund managers' full name and profiles from Morningstar Direct, which also provides comprehensive information on both the professional and academic backgrounds of portfolio managers. We then manually collect biographical information through various sources, including fund prospectuses and N-SAR filings through the U.S. Securities and Exchange Commission (SEC) EDGAR website, managers' LinkedIn pages, résumés, the Investment Advisor Public Disclosure database, and

[7] As in Gaspar et al. (2006) and Kacperczyk et al. (2014), we aggregate returns, expense ratios, and turnover ratios to group share class fund characteristics. We weigh each class by its lagged one-month TNA. Fund TNA is the sum of TNA across all share classes. For fund age, load, and investment style, we use the values of the oldest share class among all classes.

personal profiles from the managers' affiliated fund companies.[8] We use managerial profile data from fund SEC filings and their personal résumés if they differ from the information provided by Morningstar Direct.[9] The final sample consists of 1,418 unique funds and 960 fund managers over the period 1990–2016.

3.2 Recession fund managers

Following Schoar and Zuo (2017), He et al. (2018), and Law and Zuo (2020), we consider recession fund managers as those who started their careers in a recession year, defined as the calendar year that either includes the trough of a business cycle or fully falls into a recession period as identified by the business cycle dating database of the NBER. We notice that selection bias may occur if some well-informed individuals are able to foresee the potential disadvantages of starting their careers in recessions and postpone their entrance into the labour market, while others may not (Schoar and Zuo, 2017).[10] To mitigate this concern, we proxy for the exogenous starting year of labour market entry by using the year managers complete their undergraduate studies. We use the year of undergraduate completion because in our data it is the period with the highest fraction of managers starting their careers, as shown in Figure 1. The likelihood of an individual starting her first job in the year of undergraduate completion is about 15% higher than the likelihood of starting career one year after undergraduate completion.[11]

[8] We match our sample funds with records from EDGAR using the funds' Central Index Keys (CIKs) in Morningstar Direct or text-matching algorithms to identify the sample fund records in EDGAR with missing CIKs.
[9] We observe cases in which managers' education and professional profiles from Morningstar Direct differ from their publicly available résumés and company profiles. We deem that Morningstar Direct mistakenly records these managers' information by using the profiles of other managers affiliated with the same advisor firm.
[10] Also, the timing of an individual's labour market entry might be endogenously determined if less smart individuals need to improve their résumés by taking further education and thereby postpone their entrance into the labour market. We thank an anonymous referee for pointing out this possibility.
[11] One potential concern is that the likelihood of entering the labour market in a year different from the year of undergraduate completion could be several times higher. To address this, we use a window of two years that includes both the year of and the year after undergraduate completion and re-construct an indicator variable that takes the value of one if the fund is run by a fund manager who started her career in recessions (i.e., the two-year window contains at least one recession period). Similarly, we also use a window of three years that includes the

[Please Insert Figure 1 here]

3.3 Empirical specification

We test the main claim of the paper by investigating whether there is a significant association between recession managers and fund performance. We estimate the following regression equation:

$$\alpha_{i,t}^{adj} = \beta_0 + \beta_1 Recession\ Manager_{i,t-1} + \beta_2 X_{i,t-1} + \tau_t + \alpha_i + \varepsilon_{i,t} \qquad (1)$$

where $\alpha_{i,t}^{adj}$ is the performance measurement of fund *i* in year *t*, calculated as the annualized abnormal return adjusted by factor loadings from the CAPM one-factor (*CAPM*), Fama–French three-factor (*FF*), and Carhart four-factor models (*MOM*), using a two-year rolling window regression method; *Recession Manager*$_{i,t-1}$ is an indicator variable equal to one if fund *i* is managed by a recession manager in year *t-1* and zero otherwise; and $X_{i,t-1}$ is a vector of control variables, including fund- and manager-specific characteristics of fund *i* in year *t-1*. Following Kacperczyk et al. (2005), Pollet and Wilson (2008), Evans (2010), Huang et al. (2011), and Kacperczyk et al. (2014), fund-specific control variables include the natural logarithm of *Fund Size*, the natural logarithm of *Fund Family*, the natural logarithm of *Fund Age*, *Fund Flows*,[12] *Fund Expenses*, *Fund Turnover*, *Load Dummy*, and the Industry Concentration Index (*ICI*). We also follow previous studies (e.g., Shukla and Singh, 1994; Chevalier and Ellison, 1999; Gottesman and Morey, 2006; Greenwood and Nagel, 2009; Patel and Sarkissian, 2017; Cici et al., 2018; Niessen-Ruenzi and Ruenzi, 2019; Zambrana and Zapatero, 2020) and control for

year of, one year after, and two years after undergraduate completion and re-construct an indicator variable that takes the value of one if the fund is run by a fund manager who started her career in recessions (i.e., the three-year window contains at least one recession period). We find that our results remain quantitatively similar when we use these two proxy variables for the exogenous date of labour market entry.

[12] Using a sample of Canadian fund families from 2003 to 2014, Cumming et al. (2019) find that different types of mutual fund flows (e.g., retail fund flow, switch-out flow, new purchases flow) reveal different investment decisions, and reflect distinct investor incentives as well as dynamic management skills and effort of fund managers. Regretfully, we do not have access to the detailed information on the types of fund flows in the US for the 1990-2016 period, which represents a limitation of our study.

manager-specific characteristics by including *Female dummy*, *Ivy League dummy*, *MBA dummy*, *CFA dummy*, *Other Exp dummy*, the natural logarithm of *Manager Age*,[13] the natural logarithm of *Funds per Manager*, and the natural logarithm of *Style per Manager*. We provide in Table 1 detailed definitions of these fund- and manager-level variables. To estimate Equation (1), we include year fixed effects (τ_t) to capture variation over time that is common to all funds, and fund fixed effects (α_i) to account for unobserved time-invariant fund characteristics that could affect performance outcomes. We cluster the standard errors at the fund level.

3.4 Descriptive statistics

Panel A of Table 1 presents the biographical information on recession and non-recession managers. In our sample, about 13% (7%) of the recession (non-recession) managers are female, 22% (30%) graduate from an Ivy League university, 62% (59%) obtain an MBA degree, and 59% (54%) are CFA charterholders. An average recession (non-recession) manager is 48 (46) years old, and about 12% (17%) used to work in non-financial industries before entering the financial sector. At the fund level, the number of funds managed by a recession (non-recession) manager is 1.6 (1.4), and the number of styles of the funds managed by a recession (non-recession) manager is 1.4 (1.2). Overall, these results suggest that, on average, recession fund managers are older, are more likely to be female, but less likely to graduate from an Ivy League university, or to have industry experience outside the financial sector than non-recession fund managers. We do not observe significant difference between recession and non-recession managers in MBA degree or CFA credential. Compared to funds per manager, the number of funds, and the number of styles are relatively similar.

[13] Following Chevalier and Ellison (1990), we calculate the age of a manager by assuming that the manager was 21 upon college graduation. The correlation coefficient between *Recession Manager* and *Manager Age* is 0.0169.

Panel B of Table 1 reports the characteristics of funds managed by recession and non-recession managers. The differences in means between funds run by recession managers and those run by non-recession managers are all significant. In particular, funds run by recession managers are larger in fund size and older, have higher flows, and are more industry concentrated, whereas they are smaller in terms of fund family size, have lower fund expenses, have lower fund turnover, and are less likely to charge a load. The median differences in funds' size, flows, expenses, and turnover are also statistically significant. Overall, our univariate results indicate that recession managers are different from their non-recession counterparts with respect to personal characteristics and the funds they manage.

[Please insert Table 1 here]

4. Main results

4.1 Recession managers and fund performance

Table 2 provides formal evidence by reporting the estimates of Equation (1). In columns (1)-(3), we present the estimates by including only *Recession Manager* and the year and fund fixed effects. The coefficient estimates of *Recession Manager* are positive and statistically significant at the 1% level across all three measures of fund performance, suggesting that recession fund managers produce higher returns than their non-recession counterparts. In column (4)-(6), we control for fund- and manager-level characteristics. We continue to find that the coefficient estimates of *Recession Manager* remain positive and statistically significant at the 5% level or better. These results are also economically meaningful. The coefficient estimates in columns (4)-(6) imply that funds managed by recession managers show 225 basis points higher annualized returns based on CAPM, 246 basis points higher based on the Fama-French three-factor model, and 244 basis points higher based on the Carhart four-factor model relative to funds managed by non-recession managers.

[Please insert Table 2 here]

Our baseline results might be biased due to the endogenous selection of fund managers if in recessions only more talented candidates are recruited by fund companies from the labour market. We conduct several tests to mitigate this potential concern. First, following prior studies on mutual fund managers (e.g., Golec, 1996; Chevalier and Ellison, 1999; Gottesman and Morey, 2006), we further use managers' educational background as a measure of their ability. Similar to the results shown in Panel A of Table 1, we find that, compared to non-recession managers, recession managers are less likely to graduate from Ivy League universities, and there is no significant difference between the two groups in obtaining an MBA degree. We also follow Shukla and Singh (1994) and consider the professional credential (e.g., CFA) held by recession and non-recession managers. Again, we find no significant difference between the two groups.

Second, if recession managers who started their careers in recessions are more talented with better job prospects, we expect that they may need less time to become fund managers and/or are more likely to start their careers in large funds. We perform the analysis in Table 3. The variable *Fast-track Trajectory* measures the number of years a manager has spent to become fund manager for the first time, and the variable *First Fund Size* measures the total net assets of the first fund where managers start their careers. We find that, on average, it takes about 17.64 and 17.39 years for recession and non-recession managers to become fund managers for the first time, respectively, while the average total net assets of the first fund for recession and non-recession managers is $515.43 million and $556.30 million, respectively. Neither the difference in *Fast-track Trajectory* nor the difference in *First Fund Size* between the two groups of managers is statistically significant.

[Please insert Table 3 here]

Third, we re-estimate the baseline model based on a sample that consists of recession fund managers (i.e., treatment group) and the matched non-recession fund managers (i.e., control group). We first estimate a logit regression of whether a fund has a recession manager by using the same set of fund-level controls as presented in Equation (1). The propensity score is the probability estimated from the logit regression. We then apply the nearest-neighbour method to ensure that the treatment group is sufficiently similar to the control group. Each fund with a recession manager is matched to a fund with a non-recession manager with the closest propensity score. If a fund in the control group is matched to more than one fund in the treatment group, only the pair with the smallest difference in propensity scores between the two funds is retained. We also require that the maximum difference in propensity scores between the treatment group and the control group does not exceed 0.1% in absolute value.

We perform a diagnostic test to verify that the fund-level characteristics of the treatment and matched control funds are sufficiently indistinguishable and report the results in the Appendix. The results show that none of the differences in means for each observable characteristic between the treatment and matched control groups is statistically significant. Panel A of Table 4 presents the estimation results of Equation (1) using the matched sample. We find that the coefficient estimates of *Recession Manager* remain positive and statistically significant at the 5% level across all the measures of fund performance.

Fourth, to mitigate the concern that recession managers might choose to join superior fund families and manage funds in certain styles, or that superior fund families might recruit recession managers aggressively, we re-estimate Equation (1) by including year fixed effects, fund family fixed effects, and fund investment style fixed effects. As shown in Panel B of Table 4, we find that the coefficient estimates of *Recession Manager* remain positive and significant for all three performance measures.

Finally, we further explore how fund performance changes around exogenous transition of manager type. We estimate Equation (2) to examine fund performance before and after a switch in manager type distinguished by predecessor and successor in a sample of plausibly exogenous fund manager turnovers due to mergers of the fund's parent firms (Rossi et al., 2018):

$$\alpha_{i,t}^{adj} = \beta_0 + \beta_1\left(New\ Recession\ Manager_i \times Successor_{i,t}\right) + \beta_2 New\ Recession\ Manager_i + \beta_3 Successor_{i,t} + \beta_4 X_{i,t-1} + \tau_t + \gamma_l + \delta_j + \varepsilon_{i,t} \quad (2)$$

where $New\ Recession\ Manager$ is a dummy variable that equals one if the fund experiences a change of manager type from non-recession to recession manager, and zero otherwise; *Successor* is an indicator variable that equals one if the fund performance is measured when the successor fund manager takes the lead, and zero otherwise. Control variables remain the same as in Equation (1), with year fixed effects (τ_t), fund family fixed effects (γ_l), and fund investment style fixed effects (δ_j) all included.

Panel C of Table 4 reports the estimation results. The main variable is the interaction term, *New Recession Manager* × *Successor*, which shows the impact of the manager type switch on fund performance when a non-recession manager is replaced by a recession manager.[14] We find that the coefficient estimates of the interaction term are positive and statistically significant at the 5% level across all the model specifications, indicating that fund performance increases significantly when a recession manager replaces a non-recession manager.

[Please insert Table 4 here]

[14] We refine our fund sample to only include funds experienced managerial turnovers. To qualify a turnover, we require the outgoing manager and her successor to have at least 24 months of performance record.

Overall, we show that managers who began their careers in recessions on average outperform their non-recession counterparts. These results remain robust after considering the endogenous selection of mutual fund managers. However, we interpret our results with caution since the selection of mutual fund managers may also depend on some unobservable characteristics.

4.2 Possible channels of the recession effects

To further enhance our understanding on the association between recession managers and fund performance, we investigate how the recession cohort effect arises. According to Schoar and Zuo (2017), the recession cohort effect could be mainly driven by the general recession channel and/or the firm-specific channel. In particular, the general recession channel indicates that managers' attitudes and skills could be forged under the recession environment, independent of the type of firms where their careers start. The firm-specific channel indicates that the recession cohort effect could be predominantly driven by the type of firms where managers start their careers because the first job assignment may affect the type of human capital a manager acquires, representing a vital, sensitive period of imprinting for individuals (Jovanovic 1979; Gibbons and Waldman, 2004; Higgins 2005; Marquis and Tilcsik, 2013, Schoar and Zuo, 2016, 2017). The results in Schoar and Zuo (2017) suggest that the recession cohort effect is more likely to be driven by the firm-specific channel, since there exists a difference in the first job assignment between recession and non-recession CEOs. For instance, recession CEOs normally start their careers at smaller firms relative to non-recession ones.

We follow the methodological approach used in Schoar and Zuo (2017) and examine more formally whether the observed recession cohort effect in the mutual fund sector could be explained by the firm-specific channel. Ideally, we would obtain the accounting and financial fundamentals (e.g., size, sales) of the manager's first firm and further control these

characteristics in the baseline regression model. If the recession cohort effect is mainly driven by the firm-specific channel, we expect the coefficient on *Recession Manager* to become much smaller after controlling for the first job characteristics. Unfortunately, we are unable to obtain these relevant characteristics because most managers in our sample start their careers in private firms. However, we can control for time-invariant characteristics of such firms through the inclusion of first-firm fixed effects. Table 5 reports the results. The magnitude of the coefficients of *Recession Managers* decreases significantly, for example, in columns (2) and (3), by about 69% and 65%, to 0.0076 and 0.0090, compared with the 0.0246 and 0.0244 reported in columns (5) and (6) of Table 2, respectively. These findings provide some evidence that the firm-specific channel could explain a significant part of the recession cohort effect.

[Please insert Table 5 here]

4.3 Recession managers and types of skill

We next investigate whether the performance of funds managed by recession managers varies with the business cycle. We construct the variable, *Recession*, which is equal to one if the current calendar month falls in a recession period identified by the NBER business cycle dating database, and zero otherwise. We then repeat the regression analysis based on Equation (1), adding *Recession* and the interaction term between *Recession Manager* and *Recession* to the model. Table 6 reports the estimation results. The coefficient estimates of *Recession* are significantly negative, and the coefficient estimates of the interaction term, *Recession Manager* $\times$ *Recession*, are positive and statistically significant at the 5% level in all columns. These results indicate that whilst in general funds perform poorly in recessions, funds run by recession managers show higher returns than those run by non-recession managers during recession periods.

[Please insert Table 6 here]

One possible explanation is related to the time-varying fund manager skill discussed in Kacperczyk et al. (2014). That is, recession managers may display market-timing ability in recessions and add higher values for their clients by adjusting their portfolio holdings strategically. We examine this possibility by measuring a fund manager's market timing and stock picking skills using the methods described in Kacperczyk et al. (2014). Market timing means that a fund manager tilts her portfolio to the market portfolio when the corresponding market return is high and holds less when the market return is low. Stock picking implies that a fund manager holds more of a stock in periods when the underlying firm's realized stock return is high and less when it is low. We define these two measures in Equations (3) and (4), respectively.

In Equation (3), $Timing_{i,t}$ is a market-related measure of the co-movement of a fund's holdings of each asset and the systematic component of the stock return, and $Picking_{i,t}$, shown in Equation (4), is a market-related measure of the co-movement of a fund's holdings of each stock and the idiosyncratic component of the stock return.

$$Timing_{i,t} = \sum_{j=1}^{N_i}(w_{i,j,t} - w_{i,j,t}^{M})(\beta_{j,t}R_{t+1}^{M}) \quad (3)$$

$$Picking_{i,t} = \sum_{j=1}^{N_i}(w_{i,j,t} - w_{i,j,t}^{M})(R_{j,t+1} - \beta_{j,t}R_{t+1}^{M}) \quad (4)$$

where $w_{i,j,t}$ is the portfolio weight of stock *j* in fund *i* at time *t*; $w_{i,j,t}^{M}$ is the market weight of stock *j* at time *t*; $\beta_{j,t}$ is calculated from a rolling-window regression model of stock *j*'s excess returns on market excess returns, using return data from month *t-11* to month *t*; R_{t+1}^{M} is the realized market return between the start of period *t* and the start of period *t+1* given by the

benchmark factor from French's website;[15] $R_{j,t+1}$ is the realized stock return of stock *j* between the start of period *t* and the start of period *t+1*.

We regress these two hypothetical annualized returns on an indicator variable for recession managers, an indicator variable for recession month, an interaction term between the two indicator variables, and the same set of fund- and manager-specific characteristics as follows:

$$Timing_{i,t} = \beta_0 + \beta_1 Recession_t + \beta_2 Recession\ Manager_{i,t} + \beta_3 \left(Recession\ Manager_{i,t} \times Recession_t\right) + \beta_4 X_{i,t} + \tau_t + \alpha_i + \varepsilon_{i,t} \quad (5)$$

$$Picking_{i,t} = \beta_0 + \beta_1 Recession_t + \beta_2 Recession\ Manager_{i,t} + \beta_3 \left(Recession\ Manager_{i,t} \times Recession_t\right) + \beta_4 X_{i,t} + \tau_t + \alpha_i + \varepsilon_{i,t} \quad (6)$$

Column (1) of Table 7 reports the regression results from estimating Equation (5). The coefficient estimate of the interaction term is positive and statistically significant at the 1% level, suggesting that recession managers display better market timing in recessions. Column (2) reports the estimation result for Equation (6). The coefficient of the interaction term is negative and statistically insignificant. Together, these results suggest that recession managers are good market timers in recessions but not good stock pickers in booms, in line with previous studies that provide evidence in favour of positive timing ability for fund managers (e.g., Bollen and Busse, 2001; Jiang et al. 2007; Mamaysky et al. 2008; Elton et al. 2012).

[Please insert Table 7 here]

[15] Our results are robust when we proxy for the market return with the value-weighted return of stocks traded on the New York Stock Exchange, American Stock Exchange, and NASDAQ.

While prior studies, such as Kempf et al. (2017) and Kuchler and Zafar (2019), posit the effects of most recent and aggregated personal experiences on an individual's expectations and outcomes, one potential concern is that our findings in Table 7 might be due to the possibility that recession managers have learned from their previous recession experiences, rather than to the economic conditions when they enter the labour market. We alleviate such a concern by considering the plausibility of the learning effects. Specifically, we use a measure of recent recession experiences, *Last Recession*, an indicator variable for whether the fund manager has experienced the most recent recession, and a measure of aggregated recession experiences, *Recession Experience*, meaning the total number of recession months the manager has experienced in her career as a fund manager. We add these two variables to Equations (5) and (6). We then construct and add the following two triple interaction terms: *Recession Manager* × *Recession* × *Last Recession* and *Recession Manager* × *Recession* × *Recession Experience*. We expect the coefficient estimates of these interaction terms to be statistically significant if the effects of learning from previous experiences drive our findings. However, we find that the coefficient estimates of the two triple interaction terms are statistically insignificant, suggesting that the learning effects do not drive our findings.[16]

4.4 How do recession managers time the market?

Having documented that recession managers exhibit better market timing in recessions, we now investigate how recession managers time the market. Following Kacperczyk et al. (2014), we analyse investment strategies by recession managers based on two dimensions: the level of cash holdings and the sector weights of portfolio holdings. We report our results in Table 8. In Panel A, we compare the level of cash holdings for recession and non-recession

[16] We also repeat our regression analysis by just including *Lasting Recession* and *Recession Experience* as additional controls to Equations (5) and (6). We find that our findings remain essentially unchanged. The results, not reported for space considerations, are available upon request.

managers in market booms and recessions. The level of cash holdings is measured as the CRSP reported cash held at the fund level. Columns (1) and (2) report cash holdings for recession and non-recession managers in booms. On average, recession and non-recession managers hold 3.56% and 3.68% of their portfolios in cash during market booms, and the difference between the two is statistically insignificant, as reported in column (3). Moreover, we report the level of cash holdings for recession and non-recession managers during recessions in columns (4) and (5) and present the difference between the two groups in column (6). The results suggest that in recessions, the average level of cash holdings for recession managers is about 4.59%, which significantly exceeds the level for non-recession managers by 0.87%.

To examine how recession managers adjust their portfolio holdings in cyclical/defensive sectors, we follow our previous settings and analyse the change in holdings following the managerial turnover triggered by M&A activities of funds' parent firms. Specifically, we estimate the regression model in Equation (7):

$$w_{i,t}^{f} = \beta_0 + \beta_1 w_t^{peer,f} + \beta_2\left(New\ Recession\ Manager_i \times Successor_{i,t}\right) + \beta_3 New\ Recession\ Manager_i + \beta_4 Successor_{i,t} + \beta_5 X_{i,t-1} + \tau_t + \alpha_i + \varepsilon_{i,t} \quad (7)$$

where $w_{i,t}^{f}$ is the weight of fund *i* in sector *f* (e.g., low- or high-beta sector) at time *t*. We also follow Pool et al. (2012) in including the average weight in sector *f* across all peer funds with the same investment style as fund *i*, denoted as $w_t^{peer,f}$. We calculate the portfolio beta of each of the Fama–French 48 stock portfolios, using a rolling-window regression of stock returns between month *t-11* and month *t*. We define a low beta (high beta) as a portfolio beta less than (larger than) one, and hence, a defensive (cyclical) industry is an industry with a low beta (high

beta). In Equation (7), we also control for the factor loadings on the market, and estimate the HML and SMB factors for each sector *f*. We cluster the standard errors at the manager level.

We report the regression results in Panel B of Table 8. In columns (1) and (2), we report the regression results for market booms. The coefficients on the interaction term, *New Recession Manager* × *Successor*, are statistically insignificant for both the specification of cyclical industry and that of defensive industry, suggesting no clear trend in portfolio adjustment when a recession manager replaces a non-recession manager during market booms. Columns (3) and (4) present the regression results during recessions. We find that the coefficient on the interaction term is positive for defensive industry and negative for cyclical industry, both are statistically significant at the 5% level. These results imply that incoming recession managers significantly increase their portfolio weights in defensive industries and decrease their holdings in cyclical industries during recession periods.

[Please insert Table 8 here]

Alternatively, since the early recession experience may shape a manager's expectation and results in a more sensitive awareness about the upcoming economic downturn (Malmendier and Nagel, 2016), recession managers may time the market and earn better returns by adjusting their investment portfolios through anticipating macroeconomic conditions (Kacperczyk et al. 2016). To test this conjecture, we follow previous studies (e.g., Sias et al., 2006; Florou and Pope, 2012; Cremers et al., 2016; Duan et al., 2018) and compute the changes in the excess-market weights of defensive stocks in aggregate fund holdings. That is, for each quarter, we calculate a fund's proportion of stocks in its holding portfolio with a beta less than one and compute the cumulative changes of such a proportion around the 2008-2009 financial crisis,

which is also a recession period classified by the NBER business cycle dating database.[17] We then compare the portfolio adjustment between funds managed by recession and those run by non-recession managers based on the benchmark holding level in the first quarter of 2004. In Figure 2, we show that recession managers increased their portfolio holdings of defensive stocks about five times over the benchmark level by the end of the fourth quarter of 2007, when the business cycle was at its peak. Non-recession managers, however, increased their holdings of defensive stocks about two times over the benchmark level. It is also worth noting that the difference in holdings of defensive stocks between recession and non-recession managers continues to increase when the business cycle enters a recession period, but not after it reaches the trough.

[Please insert Figure 2 here]

Overall, the evidence in this subsection suggests that recession managers time the market in recessions by increasing the fraction of their portfolios in cash, investing more in defensive industries, and lowering their portfolio weights in cyclical industries. We further find that funds managed by recession managers increase portfolio holdings of defensive stocks before the economic downturn starts. All these findings provide support to the argument that the early recession experience may have a lasting effect on fund managers' investment styles.

5. Conclusion

This paper examines the impact of fund managers' experience-related characteristics on consequent performance. We find that economic conditions when a fund manager enters the labour market significantly affect her fund performance. Specifically, by identifying recession

[17] We are able to access a more comprehensive mutual fund holding data in 2004, after which the next recession period included over the sample is from the first quarter of 2008 to the second quarter of 2009 as identified by the business cycle dating database of the NBER.

(non-recession) fund managers as those who started their careers in a recession (non-recession) year based on the NBER business cycle dating database, we show that recession fund managers produce superior returns than their non-recession counterparts, and this relation becomes more prominent during recession periods. These results remain robust to alternative definitions of the labour market entry year and to different approaches that mitigate the potential endogenous selection effect on job assignments of mutual fund managers. We find suggestive evidence that a significant fraction of the observed recession cohort effect is due to the type of firm where the manager starts her career. We also investigate how recession managers earn higher returns for their clients during recession periods. We show that recession managers are good market-timers in recessions, but there is no evidence that they are also good stock-pickers in booms. These results remain consistent when we consider a manager's most recent recession experience and aggregated recession experiences in the mutual fund industry. Specifically, funds managed by recession managers time the market in recessions by holding more cash, investing more in defensive industries, and decreasing the investment weights in cyclical industries. In addition, these funds increase portfolio holdings of defensive stocks even before the economic downturn starts.

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Figure 1. Histogram of gaps between the year of a manager's undergraduate graduation and the year of initial labour market entry

Our sample consists of 960 fund managers as they may start their first full-time jobs either outside or in the mutual fund industry. This figure plots the distribution of the gap between the year when a fund manager completed her undergraduate study and the year of her initial labour market entry. The year gap is presented as zero when a manager starts her first full-time job in the same year of undergraduate completion.

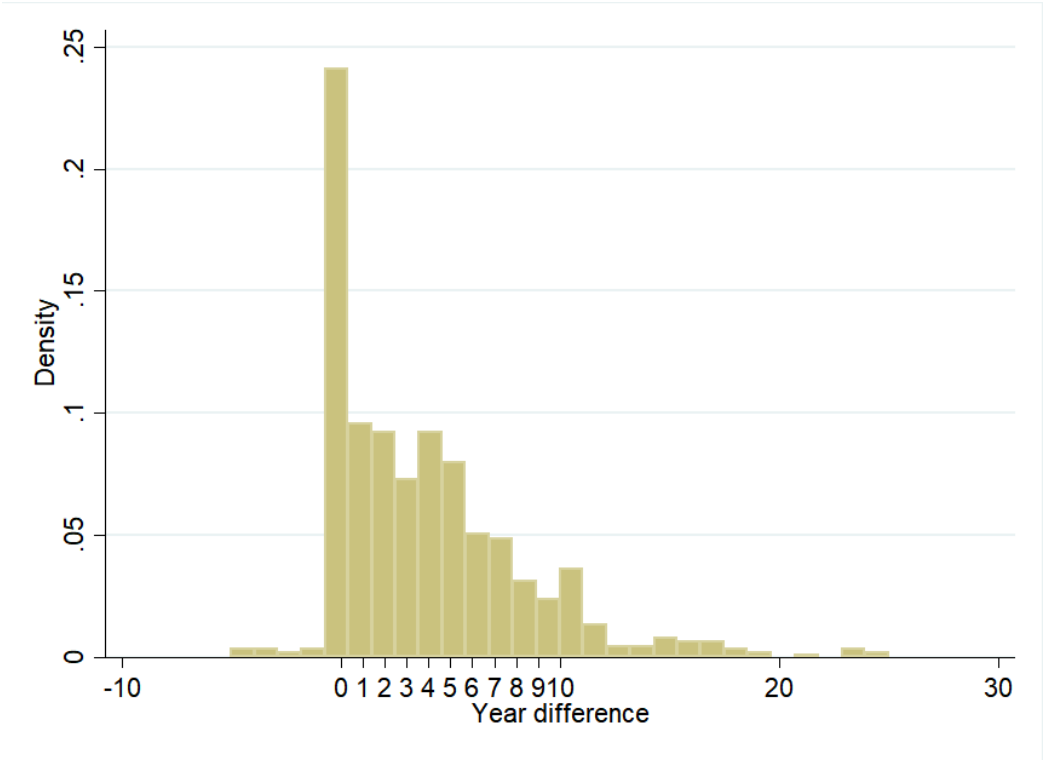

Figure 2. Cumulative changes in aggregate fund holdings in defensive stocks

This figure compares the cumulative changes in the excess-market weights of defensive stocks in aggregate fund holdings by recession and non-recession managers in the recent 2008-2009 financial crisis. We compare the portfolio adjustment between the two groups of managers based on the benchmark holding level in the first quarter of 2004. The vertical axis shows the cumulative changes of aggregate fund holdings in defensive stocks, which are measured as the multiple of portfolio holdings in defensive stocks over the benchmark level. Stocks with a CAPM-beta less than one are classified as defensive stocks.

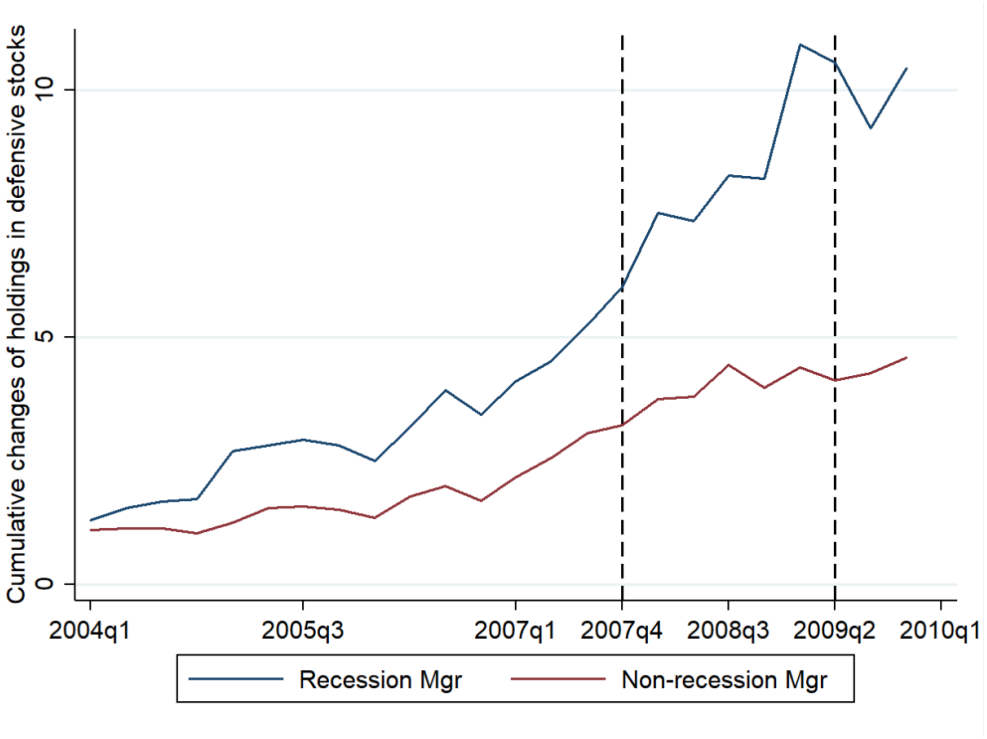

Table 1. Summary statistics

This table presents summary statistics for recession managers and non-recession managers. *Recession Manager* is a dummy variable equal to one if the fund is managed by a fund manager who began her career in a recession year. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). Panel A presents the mean and median difference of manager characteristics for recession and non-recession managers. *Female* is a dummy variable equal to one if the fund manager is female, and zero otherwise. *Ivy League* is a dummy variable equal to one if the fund manager graduated from an Ivy League university (Brown University, Columbia University, Cornell University, Dartmouth College, Harvard University, Princeton University, University of Pennsylvania, and Yale University) at any academic level, and zero otherwise. *MBA* is a dummy variable equal to one if the fund manager holds a MBA degree, and zero otherwise. *CFA* is a dummy variable equal to one if the fund managers holds the Chartered Financial Analyst credential. *Other Exp* is a dummy variable which is equal to 1 if the fund manager had any non-financial employment before entering the financial industry, and 0 otherwise. *Age* is the age of a fund manager. If a manager's birth year is missing, *Age* is calculated by assuming that the manager was 21 upon college graduation (Chevalier and Ellison, 1999). *Funds per Manager* is the number of funds (at fund level) managed by a fund manager. *Styles per Manager* is the number of style (defined by Lipper style code) from the funds managed by a fund manager. Panel B presents the mean difference of characteristics of funds managed by recession and non-recession managers. *Fund Size* is total net assets under management in millions of dollars. *Family Size* is the sum of total net assets of all funds belonging to the same management firm. *Fund Age* is the number of years since the fund inception date. *Fund Flows* is the percentage flow of new fund, calculated as $(TNA_{i,t} - TNA_{i,t-1}(1 + R_{i,t}))/TNA_{i,t-1}$, and winsorized at 1%. *Fund Expenses* is calculated as the ratio of total investment that investors pay for the fund's operating expense, including 12b-1 fees, waivers and reimbursements. *Fund Turnover* is the minimum value of aggregated sales or purchases of securities divided by the average total net asset over the past 12 months. *Load dummy* is the dummy variable equal to one if a fund charges a load, and zero otherwise. *ICI* is the industry concentration levels in fund's portfolio holdings. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Manager Characteristics

	All sample (N=960)		Recession Manager (N=148)		Non-Recession Manager (N=812)			
	Mean	Median	Mean	Median	Mean	Median	Mean Diff.	Median Diff.
Female (%)	9.733	0.000	13.287	0.000	6.977	0.000	6.310***	0.000
Ivy League (%)	29.207	0.000	21.678	0.000	29.988	0.000	-8.310**	0.000
MBA (%)	56.260	1.000	61.538	1.000	58.507	1.000	3.031	0.000
CFA (%)	51.419	1.000	58.741	1.000	53.733	1.000	5.008	0.000
Age (in years)	47.505	46.000	48.063	47.000	45.977	44.000	2.086***	3.000**
Other Exp (%)	13.751	0.000	12.250	0.000	17.230	0.000	-4.980***	0.000
Funds per Manager	2.301	2.000	1.559	1.000	1.430	1.000	0.129	0.000
Styles per Manager	1.627	1.000	1.357	1.000	1.231	1.000	0.126	0.000

Panel B: Fund Characteristics

	All sample (N=48,115)		Recession Managers (N=8,780)		Non-Recession Managers (N=39,335)			
	Mean	Median	Mean	Median	Mean	Median	Mean Diff.	Median Diff.
Fund Size (in millions)	1360.289	182.700	2178.124	221.950	1430.038	185.200	748.086***	36.750***
Family Size (in millions)	76792.43	2779.4	69357.26	2980	80247.28	3029.15	-10890.03***	-49.150
Fund Age (in years)	13.458	9.667	14.457	10.000	13.750	10.000	0.707***	0.000
Fund Flows (%)	0.845	-0.199	1.149	-0.070	0.755	-0.190	0.395***	0.120***
Fund Expenses (%)	1.276	1.173	1.238	1.160	1.287	1.190	-0.049***	-0.030***
Fund Turnover	0.949	0.562	0.722	0.500	0.924	0.570	-0.201***	-0.070***
Load dummy	0.496	0.000	0.484	0.000	0.495	0.000	-0.011***	0.000
ICI	0.726	0.307	0.902	0.300	0.706	0.300	0.196***	0.000

Table 2. Recession managers and fund performance

This table examines the association between recession managers and fund performance. The dependent variable is the fund performance, which is measured as the annualized CAPM one-factor (*CAPM*), Fama and French three-factor (*FF*) and Carhart four-factor abnormal returns adjusted for the factor loadings estimated using a two-year rolling window regression mode of fund returns (*MOM*), respectively. The main explanatory variable of interest is *Recession Manager*, which is a dummy variable equal to one if the fund is managed by a fund manager who began her career in a recession year. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). In columns (1)-(3), we present the estimates by including just Recession Manager. In columns (4)-(6), we present the estimates by including fund- and manager-level characteristics. All other fund and manager characteristics are defined in Table 1. Standard errors reported in parentheses are clustered at the fund level. All regressions include year fixed effects and fund fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Fund Performance					
	CAPM	FF	MOM	CAPM	FF	MOM
	(1)	(2)	(3)	(4)	(5)	(6)
Recession Manager	0.0238***	0.0252***	0.0230***	0.0225**	0.0246***	0.0244***
	(0.0075)	(0.0067)	(0.0067)	(0.0096)	(0.0075)	(0.0073)
Ln(Fund Size)				-0.0322***	-0.0241***	-0.0207***
				(0.0034)	(0.0027)	(0.0028)
Ln(Family Size)				-0.0053	-0.0020	-0.0068
				(0.0075)	(0.0064)	(0.0062)
Ln(Fund Age)				-0.0498*	0.0047	-0.0200
				(0.0271)	(0.0229)	(0.0242)
Fund Flows				-0.0175	-0.0314	-0.0336
				(0.0373)	(0.0345)	(0.0359)
Fund Expenses				0.0407	-0.0222	-0.0360
				(0.0436)	(0.0288)	(0.0480)
Fund Turnover				0.0056	0.0033	0.0097***
				(0.0060)	(0.0060)	(0.0030)
Load Dummy				-0.0021	-0.0057	-0.0088
				(0.0082)	(0.0073)	(0.0081)
ICI				0.0009	0.0009	0.0012
				(0.0017)	(0.0019)	(0.0015)
Female				-0.0086	-0.0044	-0.0057
				(0.0106)	(0.0081)	(0.0081)
Ivy League				-0.0039	-0.0067	-0.0055
				(0.0086)	(0.0061)	(0.0054)
MBA				0.0099	0.0091	0.0105
				(0.0086)	(0.0082)	(0.0079)
CFA				0.0031	-0.0024	-0.0014
				(0.0081)	(0.0074)	(0.0066)
Other Exp				-0.0262*	-0.0088	-0.0164
				(0.0144)	(0.0133)	(0.0127)
Ln(Manager Age)				-0.1252***	-0.1257***	-0.1227***
				(0.0438)	(0.0402)	(0.0406)
Ln(Funds per Manager)				0.0750***	0.0346*	0.0384**
				(0.0257)	(0.0209)	(0.0193)
Ln(Styles per Manager)				-0.1437***	-0.1074***	-0.0965***
				(0.0348)	(0.0294)	(0.0280)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.0154	0.0145	0.0119	0.0213	0.0160	0.0131
N	80,413	80,413	80,413	48,115	48,115	48,115

Table 3. Career trajectory between recession and non-recession managers

This table presents the career trajectory between recession and non-recession managers based on the fast-track trajectory (*Fast-track Trajectory*) and the size of first fund (*First Fund Size*) between recession and non-recession managers. *Fast-track Trajectory* measures the number of years that a manager has been spent to become the fund manager for the first time. *First Fund Size* measures the total net assets under management in millions of dollars of the first fund. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Recession Manager		Non-recession Manager			
	Mean	Median	Mean	Median	Mean Diff.	Median Diff.
Fast-track Trajectory	17.64	17.00	17.39	16.00	0.25	1.00
First Fund Size	515.43	80.06	556.30	85.06	-40.87	-5.00

Table 4. Recession managers and fund performance: Alternative sampling strategy

This table examines the relationship between recession managers and fund performance based on alternative sampling strategy. The dependent variable is the fund performance, which is measured as the annualized CAPM one-factor (*CAPM*), Fama and French three-factor (*FF*) and Carhart four-factor abnormal returns adjusted for the factor loadings estimated using a two-year rolling window regression mode of fund returns (*MOM*), respectively. The main explanatory variable of interest is *Recession Manager*, which is a dummy variable equal to one if the fund is managed by a fund manager who began her career in a recession year. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). Panel A reports the estimation results for Equation (1) based on a sample consisting of recession fund managers (i.e., treatment group) and the matched non-recession fund managers (i.e., control group). In Panel B, Equation (1) is re-estimated by including the year fixed effects, fund family fixed effects, and fund investment style fixed effects. Panel C presents the results on the predecessor and successor analysis using manager turnovers. To qualify a turnover, we require the outgoing manager and her successor to have at least 24 months of performance record. *Successor* is an indicator variable that equals to one if the fund performance is measured when the successor fund manager takes the lead, and zero otherwise; *New Recession Manager* is an indicator variable that equals to one if the fund experienced a change of manager type from the non-recession to recession manager, and zero otherwise. Columns (1)-(3) in Panel C include year fixed effects, fund family fixed effects, and fund investment style fixed effects. All other fund and manager characteristics are defined in Table 1. Standard errors reported in parentheses are clustered at the fund level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Recession manager and fund performance: the matched sample			
	Fund Performance		
	CAPM	FF	MOM
	(1)	(2)	(3)
Recession Manager	0.0449**	0.0558**	0.0357**
	(0.0205)	(0.0237)	(0.0179)
Fund and Manager Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Adjusted R^2	0.0245	0.0171	0.0142
N	11,325	11,325	11,325
Panel B. Recession manager and fund performance: fund family fixed effects and investment style fixed effects			
	Fund Performance		
	CAPM	FF	MOM
	(1)	(2)	(3)
Recession Manager	0.0115***	0.0068**	0.0067**
	(0.0041)	(0.0032)	(0.0033)
Fund and Manager Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Family FE	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes
Adjusted R^2	0.0189	0.0150	0.0134
N	47,761	47,761	47,761
Panel C. Recession manager and fund performance: Predecessor and successor analysis using manager turnovers			
	Fund Performance		
	CAMP	FF	MOM
	(1)	(2)	(3)
Successor	0.0098	0.0053	0.0151
	(0.0095)	(0.0067)	(0.0087)

New Recession Manager	0.0077	0.0066	0.0281**
	(0.0101)	(0.0136)	(0.0099)
New Recession Manager × Successor	0.0209**	0.0152**	0.0150**
	(0.0098)	(0.0083)	(0.0081)
Fund and Manager Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Fund family FE	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes
Adjusted R^2	0.0161	0.0156	0.0145
N	4,164	4,164	4,164

Table 5. Possible channels of the general recession cohort effect

This table investigates the possible channels of the general recession cohort as suggested by Schoar and Zuo (2017). We repeat the regression analysis as shown in Equation (1) by further including the first-firm fixed effects. The dependent variable is the fund performance, which is measured as the annualized CAPM one-factor (*CAPM*), Fama and French three-factor (*FF*) and Carhart four-factor abnormal returns adjusted for the factor loadings estimated using a two-year rolling window regression mode of fund returns (*MOM*), respectively. The main explanatory variable of interest is *Recession Manager*, which is a dummy variable equal to one if the fund is managed by a fund manager who began her career in a recession year. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). All fund and manager characteristics are defined in Table 1. Standard errors reported in parentheses are clustered at the fund level. Besides first-firm fixed effects, all regressions also include year fixed effects and fund fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Fund Performance		
	CAPM	FF	MOM
	(1)	(2)	(3)
Recession Manager	0.0149**	0.0076*	0.0090*
	(0.0071)	(0.0045)	(0.0052)
Fund and Manager Controls	Yes	Yes	Yes
First-Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Adjusted R^2	0.0158	0.0115	0.0107
N	41,296	41,296	41,296

Table 6. Recession managers and fund performance in recession periods

This table examines the effects of recession managers on fund performance during recession periods. We extend the baseline regression model Equation (1) by using an interaction term between the recession manager indicator and the recession period indicator. *Recession Manager is* a dummy variable equal to one if the manager of the fund started career in a recession year. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). *Recession* is a dummy variable equal to one if the current calendar month falls into the recession period as identified by the NBER business cycle dating database. The dependent variable is the fund performance, measured as the annualized CAPM one-factor (*CAPM*), Fama and French three-factor (*FF*) and Carhart four-factor abnormal returns adjusted for the factor loadings estimated using a two-year rolling window regression mode of fund returns (*MOM*), respectively. The explanatory variable of interest is the interaction term, *Recession Manager* × *Recession*. All other fund and manager characteristics are defined in Table 1. We cluster the standard errors reported in parentheses at the fund level. All regressions include year fixed effects and fund fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Fund Performance		
	CAPM	FF	MOM
	(1)	(2)	(3)
Recession Manager	0.0051	0.0054	0.0043
	(0.0112)	(0.0105)	(0.0104)
Recession	-0.0131**	-0.0148**	-0.0168***
	(0.0072)	(0.0077)	(0.0088)
Recession Manager × *Recession*	0.0275**	0.0176**	0.0185**
	(0.0103)	(0.0088)	(0.0099)
Fund and Manager Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Adjusted R2	0.0229	0.0164	0.0138
N	26,655	26,655	26,655

Table 7. Recession managers and managerial skill type

This table investigates how recession managers produce superior returns during recession periods. Following Kacperczyk et al. (2014), we evaluate managers' market timing (*Timing*) and stock picking (*Picking)* skill using Equations (3) and (4), respectively. In column (1), the dependent variable is *Timing*, which measures the market timing skill as the co-movement of a fund's holding of each asset and the systematic component of the stock return relative to the stock market. In column (2), the dependent variable is *Picking*, which measures the stock picking skill as the co-movement of a fund's holding of each stock and the idiosyncratic component of the stock return relative to the stock market. The main independent variable is the interaction term, *Recession Manager* × *Recession*. *Recession Manager* is a dummy variable equal to one if the fund is managed by a fund manager who began her career in a recession year. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). *Recession* is a dummy variable equal to one if the current calendar month falls into the recession period as identified by the NBER business cycle dating database. All other fund and manager characteristics are defined in Table 1. Standard errors reported in parentheses are clustered at the fund level. All regressions include year fixed effects and fund fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Managerial Skill Type	
	Timing	Picking
	(1)	(2)
Recession Manager	0.0010	0.0019
	(0.0172)	(0.0111)
Recession	-0.0121	-0.0112
	(0.0384)	(0.0072)
Recession Manager × *Recession*	0.0238***	-0.0053
	(0.0075)	(0.0076)
Fund and Manager Controls	Yes	Yes
Year FE	Yes	Yes
Fund FE	Yes	Yes
Adjusted R^2	0.1467	0.0207
N	34,970	34,970

Table 8. Strategies that recession managers use to time the market

This table examines how recession managers time the market. Panel A presents the comparison analysis of the level of cash holdings of funds managed by recession and non-recession managers in market booms and recessions. The level of cash holdings (*Cash Holdings (%)*) is the CRSP reported cash held at fund level. *Recession Manager* is a dummy variable equal to one if the fund is managed by a fund manager who began her career in a recession year, and zero otherwise. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). Panel B presents the comparison analysis of the portfolio weight adjusted by recession and non-recession managers in market booms and recessions. Following Pool et al. (2012), we measure the sector weights from a fund's portfolio holdings as shown in the Equation (7). We calculate the portfolio beta of fund managers' holdings of each of the Fama French 48 stock portfolios using rolling window regression of stock returns within month t-11 and t. Low (high) beta sector is defined as having a portfolio beta less (larger) than one. *Defensive Sector* is thereby defined as industries with low beta, and *Cyclical Sector* is defined as industries with high beta. *Successor* is an indicator variable that equals to one if the fund performance is measured when the successor fund manager takes the lead, and zero otherwise. *New Recession Manager* is an indicator variable that equals to one if the fund experienced a change of manager type from the non-recession to recession manager, and zero otherwise. All other fund and manager characteristics are defined in Table 1. Standard errors reported in parentheses are clustered at the fund level. All regressions include year fixed effects and fund fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A. Recession managers and cash holdings

	Market Booming			Market Recession		
	Recession Manager	Non-recession Manager	Difference	Recession Manager	Non-recession Manager	Difference
	(1)	(2)	(3)	(4)	(5)	(6)
Cash Holdings (%)	3.557	3.684	-0.127	4.594	3.721	0.873***

Panel B. Recession managers and portfolio weight adjustment

	Market Booming		Market Recession	
	Defensive Sector	Cyclical Sector	Defensive Sector	Cyclical Sector
	(1)	(2)	(3)	(4)
Successor	0.0112	-0.0110	-0.0206	0.0207
	(0.0126)	(0.0126)	(0.0169)	(0.0170)
New Recession Manager	0.0026	-0.0025	0.0031	-0.0027
	(0.0154)	(0.0154)	(0.0129)	(0.0128)
New Recession Manager × Successor	-0.0254	0.0251	0.0481**	-0.0488**
	(0.0210)	(0.0209)	(0.0129)	(0.0129)
Fund and Manager Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.4096	0.4094	0.3601	0.3594
N	8,410	8,395	1,119	1,119

Appendix. Diagnostic tests for the propensity score matching approach

This table reports the diagnostic test results for the propensity score matching presented in Panel A of Table 4. We report the univariate comparisons between treated funds (i.e., funds managed by recession managers) and their matched control funds (i.e., funds managed by non-recession managers). *Fund Size* is total net assets under management in millions of dollars. *Family Size* is the sum of total net assets of all funds belonging to the same management firm. *Fund Age* is the number of years since the fund inception date. *Fund Flows* is the percentage flow of new fund, calculated as $(TNA_{i,t} - TNA_{i,t-1}(1 + R_{i,t}))/TNA_{i,t-1}$, and winsorized at 1%. *Fund Expenses* is calculated as the ratio of total investment that investors pay for the fund's operating expense, including 12b-1 fees, waivers and reimbursements. *Fund Turnover* is the minimum value of aggregated sales or purchases of securities divided by the average total net asset over the past 12 months. *Load dummy* is the dummy variable equal to one if a fund charges a load, and zero otherwise. *ICI* is the industry concentration levels in fund's portfolio holdings.

	Treatment	Control	Diff	t-statistics
Ln(Fund Size)	3.442	3.398	0.044	0.85
Ln(Family Size)	5.642	5.513	0.129	0.08
Ln(Fund Age)	1.110	1.090	0.020	0.67
Fund Flows	0.006	0.006	0.000	0.13
Fund Expenses	0.013	0.013	0.000	0.57
Fund Turnover	0.813	0.827	-0.014	-0.24
Load Dummy	0.538	0.526	0.012	0.34
ICI	0.749	0.767	-0.018	-0.08

Supporting Documentation for Manuscript

"Recession managers and fund performance"

NOT FOR PUBLICATION

Results Available from the Authors on Request

Table A1. Recession managers and skill type: Additional analysis

This table tests whether the superior return in recessions generated by recession managers through market timing is driven by the fund managers developing their skills based on the most recent recession experiences, or the aggregated recession experience in the mutual fund industry. The dependent variable in columns (1) and (2) is Timing, which measures the market timing skill as the co-movement of a fund's holding of each asset and the systematic component of the stock return relative to the stock market. In columns (3) and (4), the dependent variable is *Picking*, which measures the stock picking skill as the co-movement of a fund's holding of each stock and the idiosyncratic component of the stock return relative to the stock market. In columns (1) and (3), the main independent variable of interest is the triple interaction term, *Recession Manager* × *Recession* × *Last Recession*, where *Recession Manager* is a dummy variable equal to one if the fund is managed by a fund manager who began her career in a recession year. A recession year must either include the trough of a business cycle or fully fall into a recession period based on the business cycle dating database of the National Bureau of Economic Research (NBER). *Recession* is a dummy variable equal to one if the current calendar month falls into the recession period as identified by the NBER business cycle dating database. *Last Recession* is a dummy variable equal to one if the fund manager experienced the most recent recession period, and zero otherwise. In columns (2) and (4), the main independent variable of interest is the triple interaction term, *Recession Manager* × *Recession* × *Recession Experience*, where *Recession Experience* measures the scale of recession experience by taking the natural logarithm of the aggregated number of recession moths that the manager has experienced in her career as a fund manager. All other fund and manager characteristics are defined in Table 1. Standard errors reported in parentheses are clustered at the fund level. All regressions include year fixed effects and fund fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Managerial Skill Type			
	Timing (1)	Timing (2)	Picking (3)	Picking (4)
Recession Manager	-0.0168	-0.0201	0.0058	0.0051
	(0.0187)	(0.0191)	(0.0130)	(0.0133)
Recession	0.0195	0.0127	-0.0160*	-0.0155*
	(0.0132)	(0.0134)	(0.0092)	(0.0093)
Recession Manager× Recession	0.0447**	0.0379*	-0.0063	-0.0076
	(0.0209)	(0.0204)	(0.0145)	(0.0142)
Recession Manager× Last Recession	0.0216		-0.0085	
	(0.0167)		(0.0116)	
Recession Manager× Recession × Last Recession	-0.0294		0.0016	
	(0.0257)		(0.0179)	
Recession × Last Recession	-0.0702***		0.0042	
	(0.0116)		(0.0081)	
Recession Manager × Recession Experience		0.0227		-0.0081
		(0.0162)		(0.0113)
Recession Manager × Recession ×Recession Experience		-0.0199		0.0031
		(0.0235)		(0.0163)
Recession × Recession Experience		-0.0541***		0.0008
		(0.0107)		(0.0074)
Last Recession	0.0009		-0.0077	
	(0.0093)		(0.0065)	
Recession Experience		-0.0061		-0.0104
		(0.0102)		(0.0071)
Fund and Manager Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.1360	0.1360	0.0408	0.0413
N	31,857	31,857	31,857	31,857